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### COMPLETE SPECIFICATION.

Communicated by INGERSOLL-RAND COMPANY, a corporation organized under the laws of the State of New Jersey, and having its principal business office at No. 11, Broadway, in the Borough of Manhattan, in the City and State of New York, United States of America.

#### Improvements in Pneumatic Hammers.

I, PHILIP ARTHUR NEWTON, of 6, Bream's Buildings, Chancery Lane, London, E.C., Chartered Patent Agent, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 The object of the invention is to provide certain improvements in the construction, form and arrangement of the several parts of a pneumatic hammer, such for instance, as a hammer drill whereby the tool holding bushing may be strongly interlocked in an improved manner with the tool cylinder for imparting the rotation of the cylinder to the tool; means being provided for securely  
10 holding the bushing in its interlocked position without the necessity of increasing the size of the front end of the cylinder, said means being readily removable without the use of tools, to permit the removal of the bushing and the anvil block whenever desired.

In the accompanying drawings,

- 15 Fig. 1 represents in longitudinal central section so much of a pneumatic drill as will give a clear understanding of this invention.

Fig. 2 is a front end view of the drill, and

Fig. 3 is a cross section taken in the plane of the line A—A of Fig. 1.

- The hammer cylinder is denoted by 1; the hammer piston by 2 and the anvil  
20 block by 3.

- The bushing 4 is interlocked with the cylinder 1 by providing the bushing with oppositely arranged outwardly extended lugs 5 and 6 which snugly fit within notches 7 and 8 in the front end of the cylinder. The body portion of the bushing extends within the bore 9 of the cylinder beyond said lugs and  
25 notches and is provided with the usual angular bore 10 for receiving the shank of the tool, the end of which presses against the anvil 3.

- A hole 11 extends transversely through the cylinder 1 and the body portion of the bushing 4 at a distance from the lugs and notches, which hole is adapted to receive with an easy sliding fit a pin 12 for holding the bushing 4 in the inter-  
30 locked position with the cylinder 1.

- A spring 13 is provided which is fitted to snap around the cylinder 1 for closing the ends of the hole 11 to prevent the unintentional removal of the pin 12. In the present instance, the cylinder 1 is provided with a circumferential groove 14 for receiving the spring 13 and retaining it against longitudinal  
35 movement along the cylinder.

- The stop pin 15 is provided for preventing a sufficient turning movement of the spring on the cylinder to expose the hole 11, which pin comprises, in the present instance, a screw inserted into the cylinder 1 with its end projecting above the bottom of the circumferential groove 14.

- 40 In the construction such as herein described it will be seen that the bushing may be securely interlocked with the cylinder by the lugs of the bushing fitting

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*Newton's Improvements in Pneumatic Hammers.*

in the notches in the cylinder thus permitting the use of a small pin for simply holding the bushing in its interlocked position.

When it is desired to remove the anvil block, the spring 13 is removed thus permitting the removal of the pin 12. The bushing may then be withdrawn which will allow the anvil block to be dropped out of the cylinder. 5

The construction herein shown will not necessitate the increase in the size of the front end of the cylinder thus permitting the tool to work in more cramped positions than where an enlarged front end of the cylinder is provided or where attachments to the end of said cylinder are used for holding the bushing in place. 10

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me from abroad, I declare that what I claim is:—

1. In a pneumatic hammer, a hammer cylinder having notches in its front end, a bushing provided with outwardly extended lugs fitted within said notches 15 for interlocking the bushing with the cylinder, the body portion of the bushing extending into the hammer cylinder beyond the said lugs and notches and a manually removable pin engaging the body portion of the bushing and the cylinder for holding the bushing in its interlocked position.

2. In conjunction with the arrangement claimed in Claim 1, the employment 20 of a spring embracing the cylinder with or without a stop pin as and for the purpose specified.

Dated this 17th day of January, 1911.

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Agents for the Applicant. 25

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

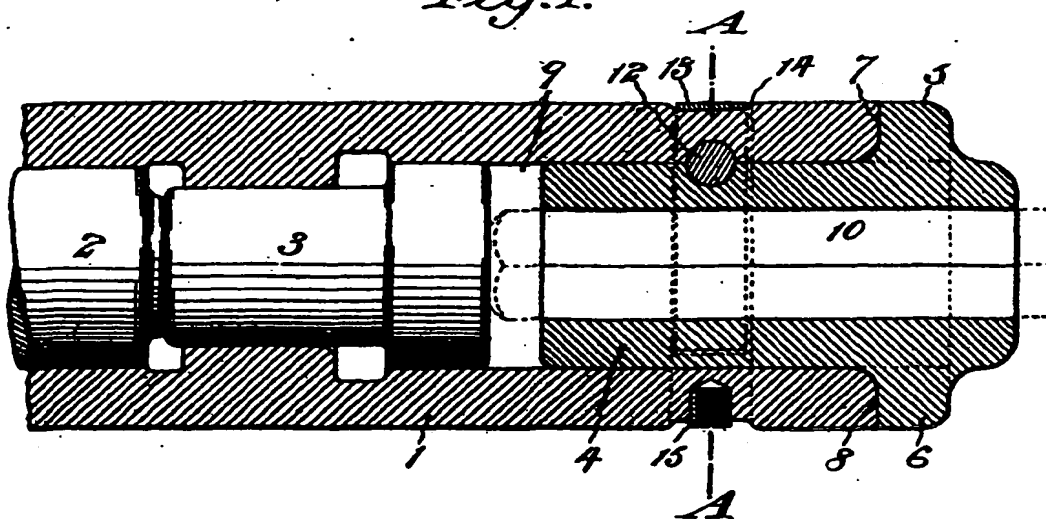


Fig. 2.

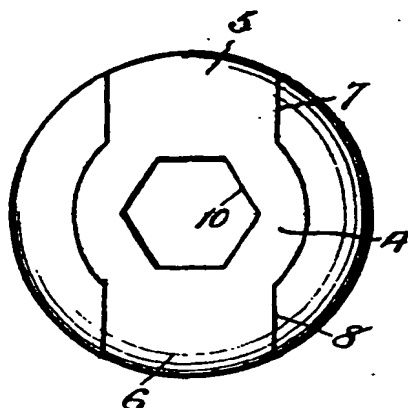
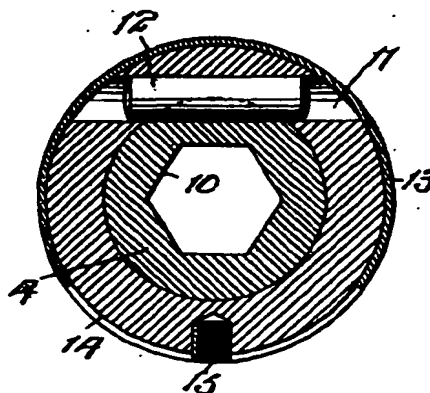


Fig. 3.



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